UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,292	11/13/2003	Sang Ho Lee	K-0547	5772

34610 7590 11/23/2007

KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200

EXAMINER	
HOLTON, STEVEN E	
ART UNIT	**PAPER NUMBER**
2629	
MAIL DATE	**DELIVERY MODE**
11/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/706,292	LEE, SANG HO	
	Examiner	Art Unit	
	Steven E. Holton	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1.4,5,8-23,25 and 26* is/are rejected.

7)☒ Claim(s) *2,6,7,24 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 8/21/2007. Claims 1, 2, and 4-27 are currently pending in the application. An action follows below:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 5, 8-23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiba Corp. (JP 2002341775) in view of Oda et al. (USPN: 5151631), hereinafter Oda.

Regarding claims 1 and 26, the Examiner notes that these claims are a device and associated method of operation. Toshiba Corp. discloses a power control system for a liquid crystal display with a light source (Fig. 1, element 22), a power supply unit (Fig. 1, element 36), a high-voltage generator to output to the light source based on the DC voltage (Fig. 1, element 42), and a feedback control unit for detecting a voltage induced from the high voltage output to determine the voltage level as an abnormal condition and inhibiting the output of the high-voltage generator during a time corresponding to the abnormal condition (Fig. 1, elements 54 and 32; paragraph 10). And the feedback control unit comprises a patterned conductor for conducting induced

voltages to the control unit (Fig. 1, element 32; paragraph 32). However, Toshiba Corp. does not expressly disclose "suspending operation of said power supply unit during the time corresponding to the abnormal condition". Toshiba Corp. discloses interrupting the high-voltage generator during the abnormal condition.

Oda discloses a power supply system for a lamp display system that includes a power supply (Fig. 1, elements 1-6), a DC voltage boosting circuit (Fig. 1, element 7), and a High frequency power boosting circuit (Fig. 1, element 8). Oda further discloses detecting over-voltage and other abnormal voltage conditions and suspending the output of the power supply based on the measurement of the abnormal conditions (col. 2, lines 20-34 and in detail in col. 4, line 39 – col. 6, line 2).

At the time of invention it would have been obvious to one skilled in the art to modify the teachings of Toshiba Corp. with the teachings of Oda to produce a backlight power system that suspends the operation of a base power supply unit during abnormal conditions. The power supply of Toshiba Corp. could be modified to change the feedback from inhibiting the high-voltage generator to inhibiting output of the power supply as described by Oda. The motivation for doing so would be to protect the lamp against DC voltage variation and to return power once DC voltages return to normal (col. 1, lines 10-16). Thus, it would have been obvious to one skilled in the art to modify the teachings of Toshiba Corp. with the teachings of Oda to produce a device as specified in claims 1 and 26.

Regarding claim 4, Toshiba Corp. discloses the patterned conductor is a printed circuit board (paragraph 21). The Examiner notes that because a current is able to be

induced within the patterned conductor it is magnetically proximate to the output of the generator and the input of the light source unit.

Regarding claim 5, Oda discloses a power supply control circuit (Fig. 1, elements 22 - 26) for receiving a feedback voltage and suspending the operation of the power supply unit when an abnormal condition is determined (col. 4, line 29 – col. 6, line 2).

Regarding claim 8, Oda shows the control circuits as separate units from the power supply unit. At the time of invention it would be a matter of design choice for one skilled in the art to integrate the control circuits with the power supply unit or to maintain the control circuits separately from the power supply unit.

Regarding claim 9, the power supplies of Toshiba Corp. and Oda change operation based on feedback. Therefore they are switching mode power supplies and have control circuitry for controlling the mode of the power supply.

Regarding claim 10, Toshiba Corp. discloses providing an integration circuit (Fig. 1, elements 56 and 58) and a rectifying diode (Fig. 1, element 62), but does not expressly disclose a coupling capacitor. It would be a matter of design choice for one skilled in the art to provide a coupling capacitor in series with the inductive sensor and other feedback circuits provided by Toshiba Corp. The coupling capacitor is used to block DC components of a voltage while allowing the AC voltages to be transmitted through the circuit. If a DC offset voltage was being sensed by the inductive sensor that was causing incorrect measurements, it would be obvious that a coupling capacitor could be used to remove the offset voltages from the measurement before determining if an error voltage was detected by the inductive sensor.

Regarding claim 11, Toshiba Corp. discloses using a series resistor and shunt capacitor as the integration circuit (Fig. 1, elements 56 and 58).

Regarding claim 12, the Examiner takes Official Notice that Zener diodes are well known in the art as limiting circuit elements that limit voltages or currents from high levels in circuit arrangements. At the time of invention it would have been obvious to one skilled in the art that a Zener diode or other type of limiting element could be used within the feedback circuits of Toshiba Corp. for providing protection to circuit components by maintaining voltage and current levels below operation thresholds of circuit elements.

Regarding claims 13 and 14, Toshiba Corp. discloses the light source is a cold cathode tube (paragraph 19) and the Examiner notes that cold cathode fluorescent lamps are commonly used with liquid crystal displays.

Regarding claim 15, the Examiner notes that this claim is similar to claim 1, except that it includes a DC/DC converter in between the power circuit and the high voltage out circuit. The Examiner states that it would be a matter of design choice for one skilled in the art to include a DC/DC converter in between a low DC power supply and a DC/AC high voltage converter based on the differences in power requirements and the circuit components to be used. The DC/DC converter would allow the DC voltages to be raised to levels for further boost by the high-voltage generator. The DC levels and using a DC/DC converter to change the voltage levels would be a matter of design choice for one skilled in the art. Also, the Examiner notes that Oda discloses

using a DC voltage booster (Fig. 1, element 7; col. 6, lines 12-31) to boost the DC voltage from the power supply circuit for later use.

Regarding claim 16, Oda discloses a power supply system for a lamp display system that includes a power supply (Fig. 1, elements 1-6), a DC voltage boosting circuit (Fig. 1, element 7), and a High frequency power boosting circuit (Fig. 1, element 8). Oda further discloses detecting over-voltage and other abnormal voltage conditions and suspending the output of the power supply based on the measurement of the abnormal conditions (col. 2, lines 20-34 and in detail in col. 4, line 39 – col. 6, line 2).

Regarding claim 17, Oda shows the control circuits as separate units from the power supply unit. At the time of invention it would be a matter of design choice for one skilled in the art to integrate the control circuits with the power supply unit or to maintain the control circuits separately from the power supply unit.

Regarding claim 18, the power supplies of Toshiba Corp. and Oda change operation based on feedback. Therefore they are switching mode power supplies and have control circuitry for controlling the mode of the power supply.

Regarding claim 19, Toshiba Corp. discloses providing an integration circuit (Fig. 1, elements 56 and 58) and a rectifying diode (Fig. 1, element 62), but does not expressly disclose a coupling capacitor. It would be a matter of design choice for one skilled in the art to provide a coupling capacitor in series with the inductive sensor and other feedback circuits provided by Toshiba Corp. The coupling capacitor is used to block DC components of a voltage while allowing the AC voltages to be transmitted through the circuit. If a DC offset voltage was being sensed by the inductive sensor that

was causing incorrect measurements, it would be obvious that a coupling capacitor could be used to remove the offset voltages from the measurement before determining if an error voltage was detected by the inductive sensor.

Regarding claim 20, Toshiba Corp. discloses using a series resistor and shunt capacitor as the integration circuit (Fig. 1, elements 56 and 58).

Regarding claim 21, the Examiner takes Official Notice that Zener diodes are well known in the art as limiting circuit elements that limit voltages or currents from high levels in circuit arrangements. At the time of invention it would have been obvious to one skilled in the art that a Zener diode or other type of limiting element could be used within the feedback circuits of Toshiba Corp. for providing protection to circuit components by maintaining voltage and current levels below operation thresholds of circuit elements.

Regarding claim 25, Toshiba Corp. shows the connection of the patterned conductor to the feedback unit, but does not expressly disclose the other connection of the patterned conductor. At the time of invention it would have been obvious to one skilled in the art that the inductive input device would require an electrical loop so that current would flow through the inductive input. Such an electrical loop would commonly be made through a connection to ground. Thus, at the time of invention it would have been obvious to one skilled in the art that the connection of the patterned circuit would be through an electrical loop and a design choice to connect the loop through ground or some other chosen voltage level.

3. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiba Corp. in view of Oda and in further view of Lee et al. (USPN: 5854617).

Regarding claim 22, as discussed above the combination of Toshiba Corp. and Oda discloses all of the limitations except, "a main controller for generating a power control signal for controlling an on/off function of the power supply unit and for generating a brightness control signal for controlling brightness of the light source unit."

Lee et al. discloses a luminescence controller (Fig. 2, elements 36 and 39) and a main controller (Fig. 2, element 20) for controlling the luminescence level and power control signal for the display device.

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Toshiba Corp., Oda, and Lee et al. Toshiba Corp. and Oda discloses a light power supply control unit to protect the backlight of a display device, but makes no comment as to external controlling processors. Lee et al. discusses an external controlling processor for a laptop display device that are used to control brightness level and power to the display. Combining the two references would be motivated to apply the power control system for a liquid crystal display described by Toshiba Corp. to a laptop computer system as described by Lee et al. The external microprocessor and luminescence control provided by Lee et al. would be needed for proper functioning of the display unit within the laptop computer.

Regarding claim 23, Lee et al. discloses a brightness controller for controlling the DC/DC converter according to the brightness control signals (Fig. 2, elements 36 and 39).

Response to Arguments

4. Applicant's arguments, see pages 14-21, filed 8/21/2007, with respect to claims 2, 6, 7, 24, and 27 have been fully considered and are persuasive. The rejections of the claims have been withdrawn.

Applicant's arguments filed 8/21/2007 have been fully considered but they are not persuasive with regards to claims 1, 4, 5, 8-23, 25, and 26.

Regarding the independent claims 1, 15, and 26, the Examiner respectfully disagrees that the language 'abnormal voltage' distinguishes itself from the prior art. The arguments presented by the applicant with regard to abnormal voltage rely on the presented definition and definitions found within the specification and cited within various dependent claims. The Examiner agrees that the Toshiba Corp. reference is used to detect and correct for a corona discharge voltage affect within the power supply and lamp assembly rather than voltage surges, no voltages, etc. as described within the specification and dependent claims of the current application. However, the broad 'abnormal voltage' language of the independent claims does not read over the applied references. The Toshiba Corp. reference is specifically measuring for the corona discharge and correcting the operation of the lamp system when a corona discharge is measured. Thus, Toshiba Corp. considers the corona discharge to be unwanted and abnormal condition that is corrected by interruption of the operation of the power supply. Thus, Toshiba Corp. is determining an abnormal voltage using a feedback loop and then using the feedback to protect the lamp circuitry.

Regarding the emphasis of the claim language regarding "an abnormal condition of the high voltage output", the Examiner notes that the specification states that a short circuited lamp would result in a voltage reading that would considered as part of the abnormal condition. Thus, the high voltage output element could be functioning correctly by providing a large amount of voltage across a short circuit, but an abnormal condition would be judged and the power supply would be inhibited from operation to protect circuitry. Therefore, the abnormal condition can occur within various parts of the entire power system and is not limited to only the high voltage output unit. Thus, the corona discharge measured within the transformer or lamp would be analogous to a short circuited lamp or similar malfunction of power supply elements other than the high voltage output. Therefore, a corona discharge measured within the lamp or transformer assembly would represent an abnormal condition of the high voltage output by producing an unwanted voltage response from the voltage being supplied from the power supply system.

Allowable Subject Matter

5. Claims 2, 6, 7, 24, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven E. Holton
Division 2629
November 20, 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER